


### ตารางสอน

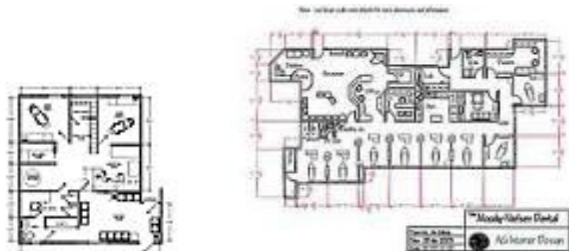
<b>Course Title</b>	3200-952
<b>Course Name</b>	Esthetic dental clinic and laboratory design
<b>Credit Hours</b>	1(1-0-3)
<b>Course Director</b>	Assist. Prof. Vichet Chindavanig
<b>Building</b>	Dent 16 (Nawamaraj Bldg)
<b>Room</b>	613

Date	Topics / Sub-topics	Instructors
	Middle column contains draft topics, sub-topics and external sources at which contain in the course.	

<p>Mon Aug 8, 2011 1000-1030 AM</p>	<p>Introduction of the subject, Objectives, Assigning groups works.</p>	<p style="text-align: center;">Note</p>  <p style="text-align: center;">Take the benefit of it</p>
<p>Thu Aug 11, 2011 0930-1200 AM</p>	<p>Dental office design; Floor plan, principles of operatory area design, dimensions, partitions, area management.</p> <p><b>Understanding nature, create suitable environs, more attractive, optimizing cost &amp; expenses while maintain and maximize performance</b></p> <p>To stimulate student's critical thinking</p> <p>To reveal fact and nature</p> <p><b>Critical thinking</b>, in general, refers to higher-order thinking that questions assumptions. It is a way of deciding whether a claim is true, false, or sometimes true and sometimes false, or partly true and partly false. The concept is somewhat contested within the field of education due to the multiple possible meanings.<sup>[1]</sup> The origins of critical thinking can be traced in Western thought to the <u>Socratic method</u> of <u>Ancient Greece</u> and in the East, to the <u>Buddhist Abhidharma</u>. Critical thinking is an important component of most <u>professions</u>. It is a part of the education process and is increasingly significant as students progress through <u>university</u> to <u>graduate education</u>.</p> <p><a href="http://en.wikipedia.org/wiki/Critical_thinking">http://en.wikipedia.org/wiki/Critical_thinking</a></p> <p>More of systematic thinking: <b>Mind Mapping</b>, see - Tony Buzan</p> <p>Maximize the power of your brain</p>	<p><b>Parts to be considered</b></p> <p><b>Interior</b></p> <p>Waiting area</p> <p>Play space for kids</p> <p>Consulting room</p> <p>Privacy (private room)</p> <p>Digital X-ray room,</p> <p>mode of information transferring</p> <p>Cleaning room</p> <p>Storage room</p> <p>Laboratory</p> <p><b>Exterior</b></p> <p>Billboard, clinic name</p> <p>Air compressor room?</p> <p>Parking</p> <p>Walkways, alley (narrow</p>

<http://www.youtube.com/watch?v=MlabrWv25qQ>

Importance of natural systematic thinking to reveal



**Design: small, medium, large dental office**  
definition

(dǐ-zīn) 

v., -signed, -sign-ing, -signs.

v.tr.

1.
  - a. To conceive or fashion in the mind; invent: *design a good excuse for not attending the conference.*
  - b. To formulate a plan for; devise ความคิดออกแบบ คิด  
แบบ: *designed a marketing strategy for the new product.*
2. To plan out in systematic, usually graphic form: *design a building; design a computer program.*
3. To create or contrive for a particular purpose or effect: *a game designed to appeal to all ages.*
4. To have as a goal or purpose; intend.
5. To create or execute in an artistic or highly skilled manner.

v.intr.

1. To make or execute plans.
2. To have a goal or purpose in mind.
3. To create designs.

n.

1.
  - a. A drawing or sketch.
  - b. A graphic representation, especially a detailed plan for construction or manufacture.
2. The purposeful or inventive arrangement of parts or details: *the aerodynamic design of an automobile; furniture of simple but elegant design.*
3. The art or practice of designing or making designs.
4. Something designed, especially a decorative or an artistic work.
5. An ornamental pattern. See synonyms at [figure](#).
6. A basic scheme or pattern that affects and controls function or development: *the overall design of an*

passage)

Outdoor rest area

Gardening

Environs

Lighting

Ventilation

-Interior (air vent?)

-Exterior (wind direction)

Energy consumption

Electric

-building insulation

-water consumption

Sound proof (reduction)

Music? Atmosphere?

Color? Furniture shape?

Material texture?

Relative to north/south

-natural light direction

-wind direction

-shading (artificial, plants)

*epic poem.*

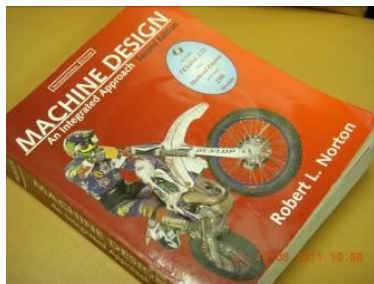
7. A plan; a project. See synonyms at [plan](#).
8.
  - a. A reasoned purpose; an intent: *It was her design to set up practice on her own as soon as she was qualified.*
  - b. Deliberate intention: *He became a photographer more by accident than by design.*
9. A secretive plot or scheme. Often used in the plural: *He has designs on my job.*

[Middle English *designen*, from Latin *dēsignāre*, to designate. See [designate](#).]

designable **de·sign·a·ble** *adj.*

Read more:

<http://www.answers.com/topic/design#ixzz1Uakfncfg>



Which room or functional area should be included in floor plan?

Should dental office floor plan be devised by area (sq.m./sq.ft.)?

Which of them are most important? Please score each of them.

>reception and waiting area

>consulting room

>office

>operatory room, X-ray, supply/cleaning/autoclaving

>storage room

What if there is limited spacing, which part should be relocate.

The matter of working space, what are working determinant?

Be grand โอโอง, imposing โอพาร and compact กระทัดรัด: which type is suitable? Necessity, compact, budget, optimize, workable – capable of being worked, dealt with or handle.



Man height of 175cm.

Optimized ceiling height: what is the impact of ceiling height?

Ceiling height can affect how people think, feel and act. See –

Meyer-Levy's research

<http://www.sciencedaily.com/releases/2007/04/070424155539.htm>



Notice: ceiling height/natural lighting

Freedom versus confinement, to evoke thinking more freely,  
perceive quality of life, at what height is suitable, at what height is  
mandate by law

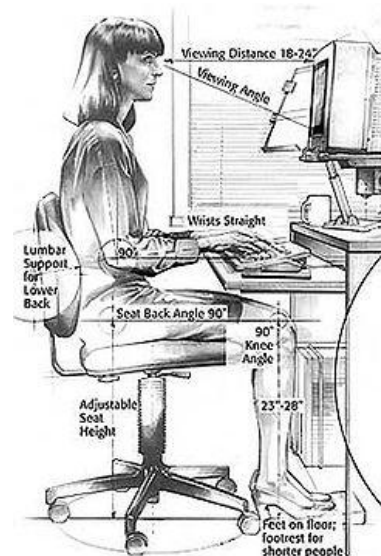
Designing: thinking from inside out

1>floor plan principles 2>furniture 3>decorative artifacts  
4>activities 5>traffic 6>safety/security 7>budget 8>future  
expansion 9>ergonomics การยศาสตร์ (friendly support your work:  
stress, speed, preventing working accidents) etc.



ERGON (work) + NOMUS (law)

เรียนรู้ความสามารถ และข้อจำกัดของมนุษย์ เพื่อใช้ประโยชน์ในการออกแบบ  
ทางวิศวกรรม เช่น เครื่องมือ เครื่องจักร อาคาร ผลิตภัณฑ์ สภาพแวดล้อม  
รวมถึงการออกแบบลักษณะและวิธีการทำงาน ให้เกิดความเหมาะสมกับมนุษย์  
ทั้งทางร่างกายและจิตใจ ให้มากที่สุด เพื่อให้มนุษย์สามารถทำงานได้ดีขึ้น เร็ว  
ขึ้น และ ต้องปลอดภัยมากขึ้น

[http://www.npc-se.co.th/pdf/book\\_safety/Ergonomic.pdf](http://www.npc-se.co.th/pdf/book_safety/Ergonomic.pdf)



Body position: Size, position, distance, lighting etc. >> that fit the  
human function, movements and cognitive. Multifunction versus  
single function design. Examples: adjustable height, adjustable  
lighting, movable versus stationary etc.

	  <p>What if you were to wear high-heel shoes? By now, you should be able to think of variabilities: beautiful, ergon&gt;&gt;see - <a href="http://www.ergon.com.au/">http://www.ergon.com.au/</a></p> <p>Discuss the providing budget of each designated group</p> <p>Group 1</p> <p>Gruop2</p> <p>Group 3</p> <p>Group 4</p>	
<p>Mon Aug 15, 2011 0930-1200 AM</p>	<p>Switch to dentchula website</p> <p><a href="http://www.dent.chula.ac.th/main.php?filename=dep">http://www.dent.chula.ac.th/main.php?filename=dep</a></p> <p>for more explanation, then revise and make summary to the topics of the day</p>	<p>Piyawan Leevairoj</p>
<p>Thu Aug 18, 2011 0930-1200 AM</p>	<p>Electrical and mechanical equipments: electrical supply, piping, compress air supply, water supply</p> <p>Exterior; color, atmosphere, landscape, privacy, parking, security</p> <p><b>(2.5 hrs)</b></p> <p>Interior design; concerning to material properties, local availability</p> <p><b>(2.0 hrs), Discussion (0.5hr)</b></p>	<p>Vichet Chindavanig</p> <p>... becoming very popular is the concept of <b>prefabricated</b> homes. This new concept allows buyers</p>





#### A design process

1. Identification of need
2. Background research
3. Goal statement(s)
4. Task specifications
5. Synthesis

to have access to **high-quality** home building materials at **affordable prices**. This is because these materials are **mass-produced** ...  
... manufacturers to build entire homes and parts of houses in a **consistent manner** while offering them at **low prices**.

<http://ezinearticles.com/?Building-Material-Manufacturers&id=268528>

Article Source:

<http://EzineArticles.com/268528>

How large is a dental operatory room?

<http://www.dentistryiq.com/index/display/article-display/373147/articles/dental-economics/volume-100/issue-2/columns/office-design/how-large-is-an-ideal-operatory.html>

Learning frequently asked questions

[http://www.desergo.com/learning/learning\\_faqs.htm](http://www.desergo.com/learning/learning_faqs.htm)

A new dentist office: where to start

<http://www.dentalcompare.com/Featured-Articles/1930-The-New-Dentist-Office-Where-to-Start/>

Project dental gallery; sample dental office design  
<http://www.nedentalalliance.com/project-gallery/>

How to select dental office furniture

<http://www.howtodothings.com/business/how-to-select-dental-office-furniture>

The professional initiation of a dental surgeon

6. Analysis
7. Selection
8. Detail design
9. Prototyping and testing
10. Production



#### Problem formulation and calculation

1. Define problem
  2. State the givens
  3. Make appropriate assumptions
  4. Preliminary design decisions
  5. Design sketches
  6. Mathematical models
  7. Analysis the design
  8. Evaluation
  9. Document results
- definition stage
- preliminary design stage
- detailed design stage
- documentation stage



(pdf file)  
<http://www.dabiatlante.com.br/trabalhos/17.pdf>

Most common mistakes in dental design projects  
<http://www.designforhealth.com/mistakes.html>

Evolution and economics in dental office design  
<http://dentistcom.wordpress.com/2008/05/18/evolution-and-economics-in-dental-office-design/>





Concrete, metal, glass, polymer, wood;  
 >physical properties  
 >chemical  
 >cost  
 >design variability



Wood decorative appearance



Blooming lotus roof

**Durability**

Concrete house in Nanjing China





<http://www.besthousedesign.com/category/houses-design/concrete-house/>

Prefabricate concrete slab

[http://en.wikipedia.org/wiki/Concrete\\_slab](http://en.wikipedia.org/wiki/Concrete_slab)



<http://www.superslabs.co.za/pictures.htm>

What are advantages of prefab concrete in construction?

Metal & steel

Ferrous

Cast iron

Wrought iron

Non Ferrous

Copper, Brass (copper + zinc; classified by zinc content,

Bronze (tin + copper)

Synthetic top for kitchen

<http://davesgarden.com/community/forums/t/822411/>

Granite top

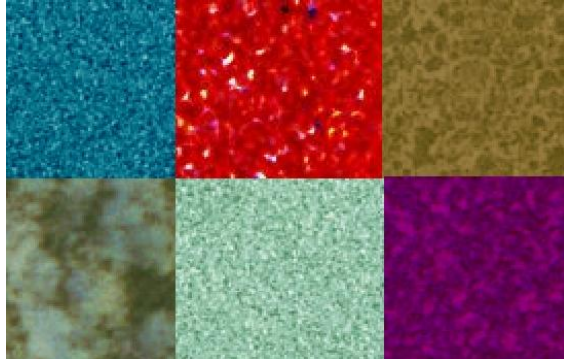
<http://ezinearticles.com/?Why-Granite-Kitchen-Counter-Tops?&id=752963>

Formica top laminate solid surfacing material

Formica was invented in 1912 by [Daniel J. O'Connor](#) and [Herbert A. Faber](#), then working at [Westinghouse](#). They originally conceived it as a substitute for [mica](#) in [electrical](#)

[insulators](#). It is composed of many layers of resin-impregnated [kraft paper](#) and topped with a decorative layer protected by melamine, then compressed and cured with heat to make a hard, durable surface

[http://www.google.co.th/search?q=formica&rls=com.microsoft:th:IE-Address&ie=UTF-8&oe=UTF-8&sourceid=ie7&rlz=117GPEA\\_en](http://www.google.co.th/search?q=formica&rls=com.microsoft:th:IE-Address&ie=UTF-8&oe=UTF-8&sourceid=ie7&rlz=117GPEA_en)



Formica colors and texture design

<http://www.formica.com/>

[http://en.wikipedia.org/wiki/Formica\\_\(plastic\)](http://en.wikipedia.org/wiki/Formica_(plastic))



Butcherblock looking laminate transformed with Miracle Method Natural Accents™



## Formica® Laminate

asia coleccion 2010-2012

THE ORIGINAL HIGH PRESSURE LAMINATE by FORMICA GROUP



Formica laminated floor

<http://www.laminatemarket.com/index.php?mo=3&art=613476>

What is melamine? What are material properties?

What are applications and designs you have experienced?

What are the advantages of being a laminate?

Synthetic topping counter: granite+polymer (a composite material)

What are advantages of using prefabricated counter top?

What are appropriate dimensions of drawers, cabinet, stool etc, for a dental office?

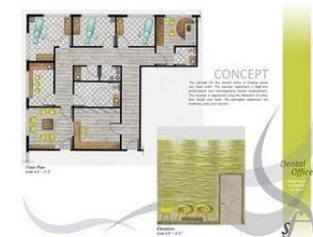


Decorative... or deep and meaningful  
 Decorative... or infestation  
 Infest – people or things you disapprove of or regard as dangerous are infesting, ...

The line between cute and **weird**. (strange>*informal*<)



Contemporary versus futuristic design



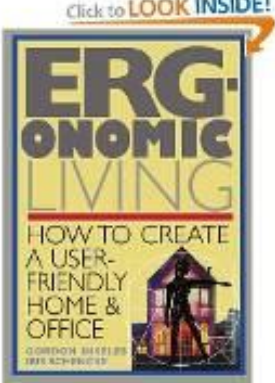


Concept design versus artistic design



Modular design versus custom design



	<p>What are factors concerning to interior material properties for a dental clinic?</p> <p>1&gt;able to clean material surface</p> <p>2&gt;less potential for bacterial and fungus to harbor on material surfaces</p> <p>3&gt;color, texture, decorative properties, durability</p> <p>4&gt;ergonomic design</p> <p>5&gt;local availability, cost</p> <p>6&gt;easy to modify, expand</p> <p><b>Class activity: to discover dental clinic dimension, to measure, to criticize (Bldg 5, 1<sup>st</sup> floor)</b></p>	
<p>Mon Aug 22, 2011- 0930-1200 AM</p>	<p>Cost &amp; materials, background noise control, critical thinking, decision making (2.5 hrs)</p>	<p>Piyawan Leevairoj</p>
<p>Thu Aug 25, 2011 1000-1200 AM</p>	<p>Traffic flow and ergonomics. Discussion (2 hrs)</p>  <p>การยศาสตร์(ergonomics) เป็นคำที่มาจากภาษากรีก คือ "ergon" ที่หมายถึงงาน(work) และอีกคำหนึ่ง "nomos" ที่แปลว่า กฎตามธรรมชาติ (Natural Laws) เมื่อนำมารวมกันจึงกลายเป็นคำว่า "ergonomics" หรือ "laws of work" ที่อาจแปลได้ว่ากฎของงาน ซึ่งเป็นศาสตร์ หรือวิชาการที่เป็นการปรับเปลี่ยนสภาพงานให้เหมาะสมกับผู้ปฏิบัติงาน หรือเป็นการปรับปรุงสภาพการทำงานอย่างเป็นระบบ</p>   <p><a href="http://www.amazon.com/Ergonomic-Living-Create-User-Friendly-Office/dp/002093081X">http://www.amazon.com/Ergonomic-Living-Create-User-Friendly-Office/dp/002093081X</a></p>	<p>Vichet Chindavanig</p>





Ergonomic is the scientific study of human performance at work.

1>See – PowerPoint *Ergonomics principles and guidelines* from UNSW school of physics OHS and management system

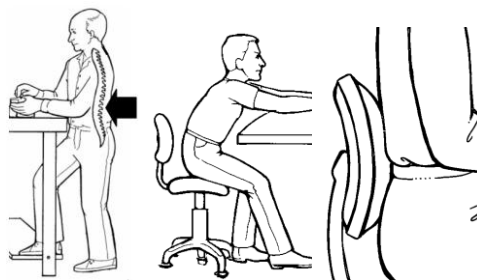
Search key word “**principles of ergonomics**” the 2<sup>nd</sup> line on first page will reveal and declare the principles and guidelines.

2>See – a 45 page PDF file

[http://www.danmacleod.com/ErgoForYou/10\\_principles\\_of\\_ergonomics.htm](http://www.danmacleod.com/ErgoForYou/10_principles_of_ergonomics.htm)

## 10 Principles of Ergonomics

1>work in natural postures



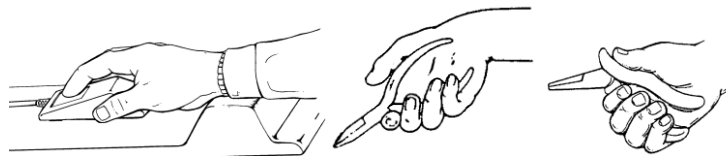
Maintain s-curve of the spine



Keep the neck aligned

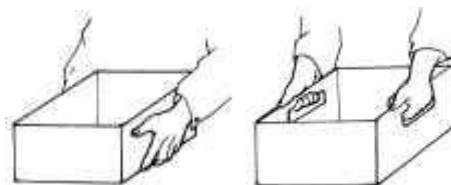
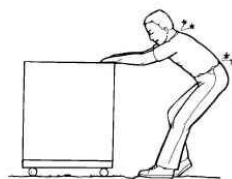


Keep elbow at sides

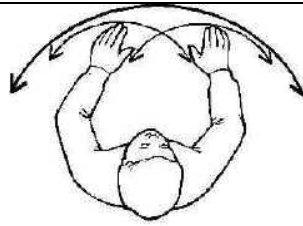


Keep wrists in neutral

2>reduce excess force



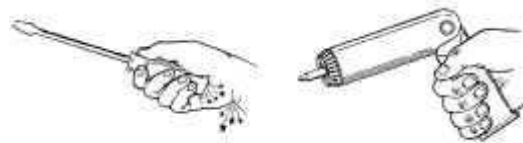
3>Keep everything in easy reach



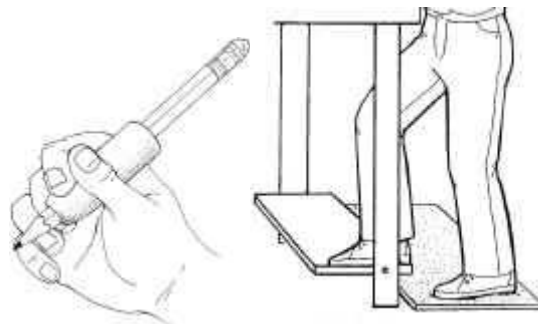
4>Work at proper height



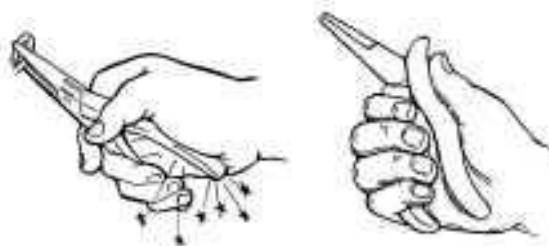
5>Reduce excessive motions

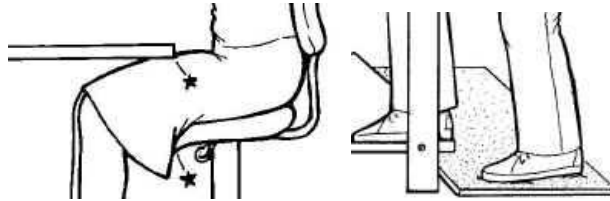
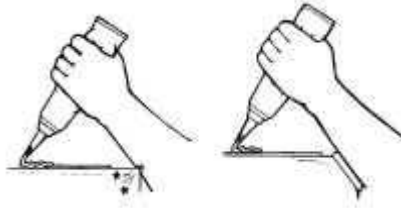


6>Minimize fatigue and static load

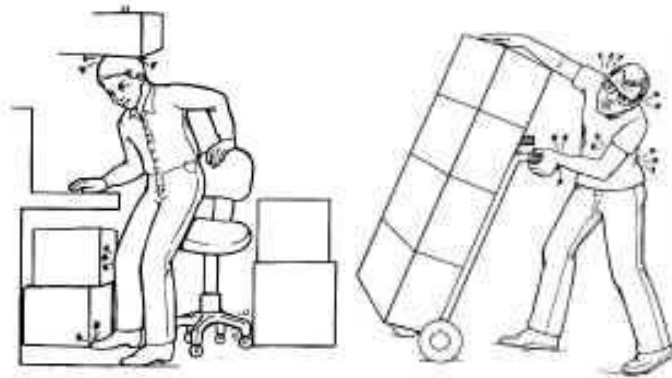


7>Minimize pressure points









8>Provide clearance



9>Move, exercise, and stretch



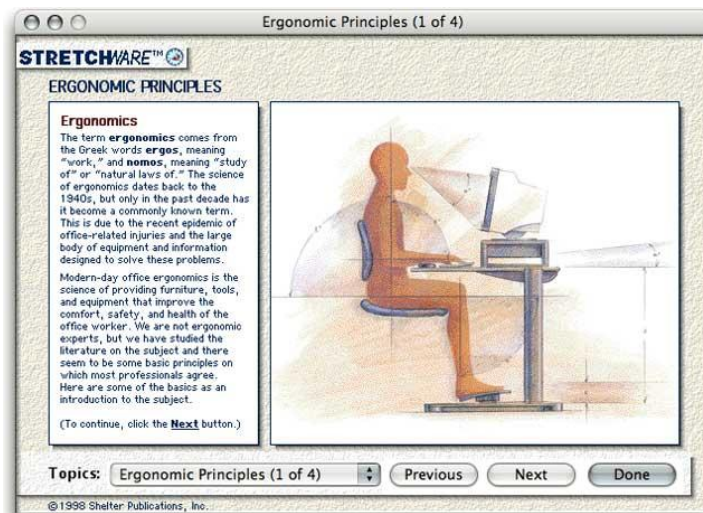
10>Maintain comfortable environments

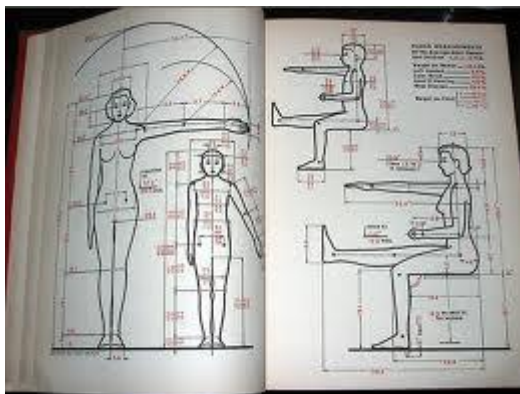
	 <p>Light and glare</p>  <p>Vibration</p> <p>More in-depth</p> <p>11&gt;Make display and controls understandable</p> <p>12&gt;Improve organization</p> <p>Above 12 principles were adapted from  <a href="http://www.danmacleod.com/ErgoForYou/10_principles_of_ergonomics.htm">http://www.danmacleod.com/ErgoForYou/10_principles_of_ergonomics.htm</a></p> <p>Class activity: to explore various dental clinics, 3<sup>rd</sup> floor main clinic, then discuss under the topic of improving floor plan regarding the ergonomic design</p>	
<p>Mon Aug 29, 2011 1000-1200 AM</p>	<p>Work Presentation/critique 10-12 minutes/group, 4 groups</p>	<p>Chalernpol Leevailoj Vichet Chindavanig Piyawan Leevairoj</p>
<p>Thu Sep 1, 2011 1000-1200 AM</p>	<p>Work Presentation/critique 10-12 minutes/group, 4 groups (continue)</p> <p><u>Conclusive judgements</u></p>   <p>A Royal Symbolic</p> <p>University/study; A passage to public services</p>	<p>Chalernpol Leevailoj Vichet Chindavanig Piyawan Leevairoj</p>



	<p>What are your career objectives?</p> <p>Don't answer this question today, but do take some quiet nights to contemplate. Then, give the most possible answers to yourself.</p> <p>Learning, thinking, and practicing &gt;&gt; deriving into ปัญญา (Dhamma/facts/natural principles)</p> <ol style="list-style-type: none"> <li>๑. ศุคตมยะปัญญา</li> <li>๒. จินตมยะปัญญา</li> <li>๓. ภาวนามยะปัญญา</li> </ol> <p>Where are you at this moment? In-depth explanation to ปัญญา, see – <a href="http://www.dent.chula.ac.th/download/Prosth/Principles_Concepts_Practices.pdf">http://www.dent.chula.ac.th/download/Prosth/Principles_Concepts_Practices.pdf</a> page 112,113</p> <p>Class activity: to evaluate teaching contents, teachers, and critique if future possible improvement should have been pursued.</p>	
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Total class participation in 16.5 hrs. of 20 students, 16 registered students dividing into 8 groups to present their selective course works (randomly pick-up 4 alternatives design situations).





End document/2011